CLAIMS

What is claimed is:

1. A method of recovering from a track format error in a data storage system having a host, a storage disk array having tracks storing data and a storage controller, the storage controller staging data from the disk array and de-staging data to the disk array, the storage controller further passing staged data to the host and receiving data from the host, the host validating track format information associated with a data track passed to the host and thereby detecting a track format error, the method comprising:

saving a copy of the track format information associated with the data track that triggered the track format error;

invalidating the track format information associated with the data track that triggered the track format error;

restaging the data; and

comparing the restaged data to the saved copy of the track format information to determine if the track format error exists with respect to the restaged data.

2. The method of claim 1 further comprising checking the data for errors not associated with the track format information.

3. The method of claim 1 further comprising the following steps if the track format error is detected with respect to the restaged data:

reconstructing the data; and

comparing the reconstructed data to the saved copy of the track format information to determine if the track format error exists with respect to the reconstructed data.

4. The method of claim 3 wherein the data is reconstructed by performing a reconstruct read recovery.

5. The method of claim 1 further comprising the following steps if the track format error is not detected with respect to the restaged data:

passing the restaged data to the host; and

indicating to the host that an error which is not the track format error may have occurred.

6. The method of claim 3 further comprising:

rebuilding the track format information to match the reconstructed data;

writing the reconstructed data to the storage disk array; and

passing the reconstructed data to the host.

7. The method of claim 3 further comprising:

checking the data for errors not associated with the track format information; and

correcting the errors not associated with the track format information.

8. The method of claim 6 further comprising the following steps if the track format error is not detected in the reconstructed data:

identifying a disk having the track associated with the track format error; and

rejecting the disk having the track associated with the track format error from the storage disk array.

9. A system for reading stored data having the ability to recover from a track format error, comprising:

a storage controller staging and de-staging data from a storage disk array, the storage controller further passing data to a host and receiving data from the host, the host validating track format information associated with a data track passed to the host and detecting a track format error;

means for saving a copy of the track format information associated with the data track that triggered the track format error;

means for invalidating the track format information associated with the data track that triggered the track format error;

means for restaging the data; and

means for comparing the restaged data to the saved copy of the track format information to determine if the track format error exists with respect to the restaged data.

10. The system of claim 9 wherein the means for restaging the data comprises a command sent from the storage controller to a storage device adapter requiring the

restaging of unmodified sectors associated with the data track triggering the track format error.

11. The system of claim 9 further comprising means for checking the data for errors not associated with the track format information.

12. The system of claim 11 wherein the means for checking the data for errors not associated with the track format information is one of a vertical redundancy check, a longitudinal redundancy check, a physical address check and a cyclic redundancy check.

13. The system of claim 9 further comprising the following if the track format error is detected in the restaged data:

means for reconstructing the data; and

means for comparing the reconstructed data to the saved copy of the track format information to determine if the track format error exists with respect to the reconstructed data.

14. The system of claim 13 wherein the means for reconstructing the data is a reconstruct read recovery.

15. The system of claim 9 further comprising the following if the track format error is not detected in the restaged data:

means for passing the restaged data to the host; and

means for indicating to the host that an error which is not the track format error may have occurred.

16. The system of claim 13 further comprising means for rebuilding the track format information to match the reconstructed data.

17. The system of claim 14 further comprising:

means for checking the data for errors not associated with the track format information; and

means for correcting the errors not associated with the track format information.

18. The system of claim 15 further comprising the following if the track format error is not detected with respect to the reconstructed data:

means for identifying a disk having the track associated with the track format error; and

means for rejecting the disk having the track associated with the track format error from the storage disk array.

19. An article of manufacture for use in programming a data storage system to recover from a track format error, the data storage system having a host, a storage disk array having tracks storing data and a storage controller, the storage controller staging data from the disk array and de-staging data to the disk array, the storage controller further passing staged data to the host and receiving data from the host, the host validating track format information associated with a data track passed to the host and thereby detecting a track format error, the article of manufacture comprising a storage medium having logic embedded therein to cause components of the data storage system to:

save a copy of the track format information associated with the data track that triggered the track format error;

invalidate the track format information associated with the data track that triggered the track format error;

restage the data; and

compare the restaged data to the saved copy of the track format information to determine if the track format error exists with respect to the restaged data.

20. The article of manufacture of claim 19 wherein the logic further causes the checking of the data for errors not associated with the track format information.

21. The article of manufacture of claim 19 wherein the logic further causes components of the data storage system to take the following steps if the track format error is detected with respect to the restaged data:

reconstruct the data; and

compare the reconstructed data to the saved copy of the track format information to determine if the track format error exists with respect to the reconstructed data.

22. The article of manufacture of claim 21 wherein the data is reconstructed by performing a reconstruct read recovery.

23. The article of manufacture of claim 19 wherein the logic further causes components of the data storage system to take the following steps if the track format error is not detected with respect to the restaged data:

pass the restaged data to the host; and

indicate to the host that an error which is not the track format error may have occurred.

24. The article of manufacture of claim 21 wherein the logic further causes components of the data storage system to:

rebuild the track format information to match the reconstructed data;

write the reconstructed data to the storage disk array; and

pass the reconstructed data to the host.

25. The article of manufacture of claim 21 wherein the logic further causes components of the data storage system to:

check the data for errors not associated with the track format information; and

correct the errors not associated with the track format information.

26. The article of manufacture of claim 24 wherein the logic further causes components of the data storage system to take the following steps if the track format error is not detected in the reconstructed data:

identify a disk having the track associated with the track format error; and

reject the disk having the track associated with the track format error from the storage disk array.